The Study on Growth and Yield Changes Dynamic Laws of Xinjiang Small Reed (*Phragmites australis*)

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The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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Key words : Reed , growth and developing period , leave number , cutting height , cutting period

Introduction Reed(Phragmites australis (Cav .) Trin .ex Steud) is most Important natural growing grass in Xinjiang grasslands and animal husbandry production . It has important functions to protect and improving ecosystem ,to fully utilize low , damping and salty area . Engaging in experiment on the reed land formed naturally , distinguishing its excellent plant height , leaf number , cutting in different growing period and different cutting high etc . , provided scientific basis for effective using , and achieve better economic results at the animal husbandry production .

Materials and methods The experiment field is choosing at side of the rice field . test design is used as split-plot design , main plot is designed cutting in different growing period , respectively at heading stage , flower stage , fructicative stage and mature to yellowing stage , 3 times , in each period , and plot area is $20m^2$. Main plot is dividing into 4 equal parts as split plot . Split plot is designed cutting height in 0cm , 5cm 10cm and 15cm , 3 times . Split plot area is $5m^2$. Observing growing and developing period is standardized as 50% plant into that period , and measuring length between nodes by selecting the longest on the stem ; counting leaf number by selecting middle length stems , and calculating main data from 20 observed stems number . Measuring dry wet ratio and leaf stem ratio is done on the 500g wet grass drained in the lab .

Results The test result shows that from regrowing to ear , reeds growing speedily , and the variation of length of knot are large , particularly new shaped nodes , after earing , it becomes to slower . From the regreening , the reed leave number is increasing in different degrees . After flowering , its leaf numbers is not increasing . When turned to yellow , some leaves on the lower part of stem are defoliated , so its number decreases . Each plot production has some differences because of reeds growth . If it is growing in moist condition and thicknesses are enough , hay produced is much increased . To compare main yield of each growing period and different cutting height , mostly the high yield cutting is at fructifcative period , cutting at flower period is second , and then is cutting at ear stage . Cutting at mature to yellow is reducing in the yield . To comparing effects of different cutting height with yield , the cutting height at 0cm is significantly high . Other cutting height .in proper order is 5cm , 10cm and 15cm .Through variance analyzing make known that , it has significantly variability between different cuttings height 0cm 5cm and 10cm 15cm . There is no significantly variability between other treat methods . Comparing dry wet ratio , in birthing nodes has less dry hay percentages , in the ear is higher , and at fructicative stage is mostly high . Comparing leaf-stem ratio , in birthing nodes cutting at 0cm height is the highest rate ; in proper order is 5cm , 10cm , 15cm . leaf components higher than stem between 2 .36～2 .52times . In the ear , it is no significantly variation among all the different cutting height , average leaf-stem ratio is 209 .59% , leaf components are more than twice the stem .at the flower period , their ratio is about 1 .4 :1 . At the fructicative and mature to yellow period , their ratio are almost the same .

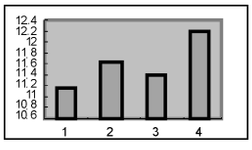

Figure 1 *Measuring result length of a knot .*

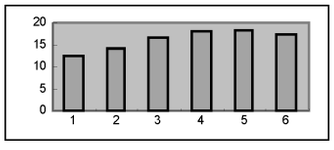

Figure 2 *Measuring result of leaf number variation in different growing period .*

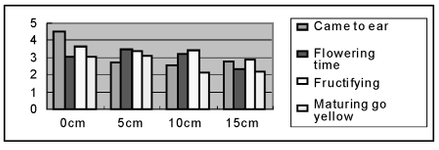

Figure 3 *Measuring yield result of different cutting height .*

Conclusions According to the different length of a knot and leaf numbers variation is in different growing period , before the ear period is reed growth very fast , it has very big variation between length of a knot and average leaf number on per stem , especially during birthing new nodes . Hereafter , nodes number has almost shaped , so there are no more changes about them . There are 16～23 leaves average on each stem . Based on reed productivity cutting in different growing period and different cutting height , any times are good for harvesting after ear stage , and there is no significant variation among them . However , there are many leaves defoliate after turned to yellow , thus to consider the regrowth hay yield and nutritious changing among the components , it is better cutting at the heady period .

Reference

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